

A Survey of Animal and Tractor Farming Techniques in Jigawa and Kano State, Nigeria

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Abstract : *Nigeria's agriculture industry has performed abysmally, notwithstanding the importation and utilization of huge foreign machineries and equipment. The reason suggested is that in Nigeria's agriculture industry, the importation and utilization of foreign machineries have not been matched to the people's socio-economic and technological setting. Since 1960 Nigeria has been importing equipment for different agricultural processes and purposes without a thought as to their suitability to the ability and socio-technological system of the people who use the machines. This study is a joint effort of the National Board for Technology Incubation and Hydraulic Equipment Development Institute, both of the Federal Ministry of Science and Technology in Nigeria. The collaboration discussed with the farmers in Kano and Jigawa States with a view to finding their problem with equipment usage in farming and discovered that they fared better with animal utilization than the tractor. The paper consequently recommends drastic measures to firmly establish and enhance animal traction utilization in Northern Nigeria, together with similar appropriate technologies in other agricultural processes.*

KEYWORDS: animal traction, tractor, appropriate technology, agriculture, farming techniques

INTRODUCTION

Technology as an economic activity aims at a random combination of the factors of production of land, labour and capital to achieve profit. The emphasis on technology born out of tradition rather than common sense has been the improvement and enthronements of the capital factor above all other factors of production. But technology is actually all encompassing including of course devising other ways through which the people can do the same things to achieve better results. Our concentration on improving the capital factor has led us into enthroning machines at the detriment of the labour or human factor leading to poor results.

Specifically the importation of the tractor and pesticide technology has not yielded the desired benefits. Several Nigerian Government Agricultural Programmes such as Operation Feed

the Nation (OFN), Green Revolution and Food for All Programme, have been geared towards tractorization which have

not yielded expected results, for a number of reasons such as: lack of skilled operators and personnel, lack of suitable implements and spare parts, farm land fragmentation, and increase in the cost of tractors and implements. (Abubakar and Ahmad 2010)

Despite the concerted effort to introduce mechanization and improved seeds, the desired goal of realizing sufficiency in the production of food, cash crops and agro-industrial raw materials has not been fully achieved. The operation of imported machinery has been bedevilled by the problems of spare parts, repair facilities, capital, skill manpower (operators and mechanics) and the fact that most machinery applications are incompatible with farmers cropping techniques. Available information showed that 1000 tractors imported in 2003 were without required implements, thus rendering them unusable. Also about 50.5 per cent of the estimated 10,000 tractors in the country are in a state of disrepair. (Ukeje 2004). The experience in many developing countries including Nigeria is that tractors have not been an appropriate solution. (Daramola 1999).

Tractorization is apparently the most inappropriate solution to improve food productivity in sub-Saharan Africa. In those foreign countries for which these tractors were designed and produced originally, their farms are in large segments. They had developed from manual farming to employment of several work bulls to pull multiple implements across the large expanse of lands. The quest had arisen from the advent of internal combustion engines and was geared towards developing a farm vehicle to pull the large multiple implements hitherto drawn by work bulls. They designed and built the tractor to solve their farm power need within their countries' socio-technological setting.

In 2006, the World Food and Agricultural Organization (FAO) classified levels of agricultural mechanization. Farm sizes close to and above 50ha are classified as large farms which are suited to tractor operation. Those of 5ha and above are classified as medium farms most viable for animal traction. Farm lands of not more than 5ha are small sized farms currently undertaken by human labour. Currently 86 per cent of farm lands in Nigeria are cultivated by human labour, 6 per cent by animal traction and 9 per cent by tractor power. (Takeshima and Salau 2010).

In sub-Saharan Africa and especially in Nigeria farm lands are fragmented mostly in the range of less than one hectare to about ten hectares. Only very few farm lands in Nigeria are up to fifty hectares which is the minimum land area needed to make tractor usage economically viable. It is thus clear that apart from cost and maintenance difficulties, land fragmentation is another setback to viable tractor utilization in Nigeria.

The broad objective of the study is to confirm or disprove the much published adverse effect of tractorization on Nigeria's agriculture, and to thereby challenge engineers of the two collaborating institutions to innovate and install matching appropriate technologies in their place if the need be.

The specific objectives are:

- a. To interview a wide range of farmers from Kano and Jigawa States and ascertain machine involvement in their farming operation.
- b. To ascertain the difficulties faced by the farmers with respect to equipment availability and operation.
- c. To determine the real technological needs of the farmers and present the fact to the Management of the two institutions for action.

METHODOLOGY

A survey was conducted in Kano and Jigawa States which are major farming communities in northern Nigeria. A questionnaire was structured to ascertain the following among other things:

- a. Their individual method of farming and to what extent they employ tractors and knapsack sprayers.
- b. To ascertain the difficulties faced by those who employ machines with respect to availability and operation.
- c. To find out what the farmers desired the government to do for them in the area of machine provision.

A total sample of 200 farmers, one hundred each from the two states was interviewed. The data was analysed at a joint meeting of engineers from the two collaborating organizations.

RESULTS

The study shows most of the farmers cultivated and weeded manually mainly because they could not own work animals or hire tractors. About 10% utilized animal traction but weeded manually, while another 10% utilized animal traction and employed knapsack sprayers for weeding. About 7%, who employed tractors to cultivate also employed knapsack sprayers for weeding. Apart from those who employ animal traction or tractors and who cultivated about five hectares or more each, the others cultivated about one hectare each.

Most farmers wanted government to help them with fertilizers. None of the tractor farmers owned a tractor. They hire from government and owners. They requested government to import more tractors and make the spare parts to become available in the country as other automobiles, as well as train more mechanics in tractor repair and maintenance. They also want government to reduce the cost of diesel to bring down the cost of hiring tractor. Animal traction farmers do not want to be

compelled to use tractor. They rather prayed government to provide tools and harness and feeds during drought. The purely manual farmers, who are over 70%, would want to utilize work animals if they could be assisted. Some are animal farmers also but lack the training.

Following the analysis of the report, the team made the following recommendations:

- a. That government at all levels should make effort to train most of the manual farmers and help them to take off with a pair of work animals.
- b. That animal drawn implement for cultivation and weeding should be improved and manufactured en-masse to make it easily accessible to the farmers.
- c. That the engineers of the two collaborative institutions and the entire research institutions in the country should look at all farming processes from cultivation to harvesting and design animal drawn machines that would efficiently execute each of the processes.

CONCLUSION

It is seen that tractor users having enjoyed the benefits thereof would wish to continue its usage. However the conditions they requested for effective operations are impossible. Government to import more tractors, import more spares and make them as available as other automobile spare parts in the country, and also train more persons in the repair and maintenance of tractors. How many types of tractors, makes and models have we imported and from where? How much money shall the country spend in importing more and from where? What quantity of yield are we expecting at the end of the day? These are questions awaiting answers for utilization of tractor to try to start to work.

Animal traction farmers are contented. They only need implements and harness and would want government to improve feeds availability during dry season. Understandably government can easily assist local manufacturers of these implements as well as establish new industries for the production of animal drawn implements. Government can also address the challenge of feeds during dry season.

The largest number of farmers who could not afford either tractor or animal traction craves to be assisted to take off animal traction farming. It becomes obvious that animal traction is the appropriate technology for farming in Northern Nigeria. It is simple, low in capital cost and employs local skills and labour. We do not need to import anything. It matches the socio-economic and technological setting of the farmers in northern Nigeria, most of who are also animal farmers. It is discovered herein that neglect of animal traction and enthrone of tractorization is the bane of agricultural production in Nigeria. After all the area a tractor does in a day, a team of work animals with multiple implements can also achieve.

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